

CLAIMS

What is claimed is:

1. An IC assembly comprising:
an IC;
a supporting surface; and
an interconnect mechanically and electrically coupling the IC to the supporting surface, the interconnect comprising a plurality of through conductors electrically bonded to the IC and the supporting surface, and a dielectric base layer mechanically bonded to the through conductors, IC and supporting surface, and traces of a release coating positioned between the dielectric base layer and either the IC or the supporting surface, the release coating traces comprising a residue of a composition which differed from the composition of the IC, supporting surface, and dielectric base layer.
2. The IC assembly of claim 1 wherein the IC dielectric base layer comprises a material from at least one of the following groups: cyanate esters; cycloaliphatic epoxies; bismaleimides; cyanate ester and epoxy copolymers; cyanate ester and bismaleimide copolymers or blends; and cycloaliphatic epoxy and bismaleimide copolymers or blends.
3. The IC assembly of claim 2 wherein the traces of a release coating at least partially comprise residues of silicon, Teflon[®], or graphite release agents.
4. The IC assembly of claim 3 wherein the through conductors comprise wires.
5. The IC assembly of claim 4 wherein the through conductors comprise solder paste vias, the solder paste comprising at least one of the following: PbSn, PbSnAg, an Indium alloy, and an Au eutectic alloy.

6. The IC assembly of claim 1 wherein the dielectric base layer comprises a fiber mesh material impregnated with a thermoset or a thermoset intermixed with a particulate filler.
7. The IC assembly of claim 6 wherein the dielectric base layer comprises the fiber mesh material impregnated with a thermoset, and the fiber mesh material comprises at least one of the following: glass, graphite, KEVLAR[®], TEFLON[®], and polyester.
8. The IC assembly of claim 6 wherein the dielectric base layer comprises the fiber mesh material impregnated with a thermoset, and the fiber mesh material is thermally conductive.
9. The IC assembly of claim 6 wherein the dielectric base layer comprises the thermoset intermixed with a particulate filler, and the filler comprises at least one of: alumina, silica, graphite fibers, graphite particles, silicon nitride, silicon carbide, aluminum nitride, diamond, beryllium, and conductive polymer filler.
10. The IC assembly of claim 6 wherein the dielectric base layer comprises the thermoset intermixed with a thermally conductive, non-electrically conductive particulate filler, and the filler comprises at least one of: silicon nitride, silicon carbide, aluminum nitride, boron nitride, diamond, conductive polymer filler, graphite and alumina.
11. The IC assembly of claim 6 wherein the dielectric base layer comprises a physical thermal layer sandwiched between two thermoset layers.
12. The IC assembly of claim 11 wherein the thermal layer comprises copper or a phase change film.
13. A method for coupling an IC to a supporting surface comprising:
providing an IC;
providing a supporting surface to which the IC is to be mechanically and electrically bonded;

providing a pre-form assembly comprising a base layer and a sacrificial layer;
applying the pre-form assembly to either the IC or supporting surface;
peeling away the sacrificial layer;
sandwiching the peeled pre-form assembly between the IC and the supporting
surface; and
curing the base layer.

14. The method of claim 13 wherein providing the preform assembly comprises:
providing a sacrificial layer;
coating the sacrificial later with a release coating;
applying a thermosetting material on top of the release coating;
curing the thermosetting material to form a B-stage layer; and
inserting through conductors into the thermosetting material.
15. The method of claim 14 wherein the step of inserting through conductors into the thermosetting material comprises either piercing wires into the thermosetting material, or lasing or drilling and subsequently filling holes in the thermosetting material with a solder paste.
16. The method of claim 13 wherein the base layer comprises a fine mesh fiber material impregnated with a thermoset.
17. The method of claim 16 wherein the fine mesh fiber is thermally conductive.
18. The method of claim 16 wherein the fine mesh fiber is electrically non-conductive.
19. The method of claim 13 wherein the base layer comprises a thermoset intermixed with a paritcle filler.
20. The method of claim 19 wherein the particle filler is thermally conductive.

21. The method of claim 19 wherein the ~~the~~ particle filler is electrically non-conductive.